Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

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Marketing channels and price spread of tomato in Chittoor district of Andhra Pradesh

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Abstract
Tomato is the world's largest vegetable crop after potato and sweet potato, but it tops the list of canned vegetables. In India, tomato is grown over an area of 777.5 thousand hectare with annual production of 1, 82, 86.4, 000 million tonnes The states producing maximum amount of vegetables are Orissa, Utter Pradesh, Andhra Pradesh, Bihar, West Bengal, Karnataka and Kerala. Tomato is one of the most important vegetable crop grown in the country. In Andhra Pradesh, Chittoor district ranks first in the production of tomato with an area of 16320 hectare and production of 13000 Million tonnes next to Prakasham, Vishakhapatnam, Kadapa and Anantapuram during 2015-16. This district was purposively selected for this in depth study, a sample of two mandals, four villages and 120 sample farmers were selected for collection of requisite data using pre-tested schedule. For eliciting the information pertaining to the marketing aspects of tomato in Chittoor district, two marketing channels were identified. Price spread analysis and marketing efficiency indices were worked out across the two marketing channels. Net price received by producer was Rs. 725.95 in channel-I and Rs. 717.80 in channel-II. Total marketing costs in consumer's rupee was (23.31%) and (27.53%) in channel-I and Channel-II and percentage share of gross marketing margin in consumers rupee was (29.85%) and (32.58%) in channel-I and channel-II respectively. The producers share in consumer's rupee was highest in channel-I (46.84%) and the lowest was in channel-I (39.88%). Marketing efficiency ratio was found to be highest in channel-I.

Keywords: Tomato, Marketing costs, Gross Marketing Margins, producer's Share in Consumer's Rupee, Producer's Net Price

Introduction
Tomato is the world's largest vegetable crop after potato and sweet potato, but it tops in the list of canned vegetables. In India, tomato is grown over an area of 777.5 thousand hectare with annual production of 1, 82, 86.4, 000 million tonnes (India stat.com 2015-16). In Andhra Pradesh, it was grown in 167 thousand hectare with a production of 3354.74 thousand million tonnes per annum. Chittoor district ranked first in the cultivation of tomato in Andhra Pradesh. The area and annual production of tomato in the Chittoor district were 16320 hectare and 13000 million tonnes. Andhra Pradesh stood first in tomato production with 925 thousand tonnes during 2015-16 occupying an area of 77 thousand hectare It is largely grown in the districts of Chittoor, Prakasham, Vishakhapatnam, Kadapa and Anantapuram. Chittoor district occupies first place in the state in tomato cultivation with an area of 16320 hectare and production of 13000 Million tonnes next to Prakasham, Vishakhapatnam, Kadapa and Anantapuram during 2015-16.

In the agricultural year 2015-16, the district stood first in both in terms of area and production of tomato in Andhra Pradesh. In view of the potentiality of tomato crop in Chittoor district, its economic analysis has assumed greater significance. However, not much of literature was available pertaining to the marketing aspects of tomato cultivation in Rayalaseema region of Andhra Pradesh in general and in Chittoor district in particular. In view of this, an in-depth microscopic study on marketing aspects of tomato cultivation was felt essential and this research paper was attempted in this direction to analyze the marketing efficiency in transacting tomato in Chittoor district with the following specific objectives:
1. To identify the predominant marketing channels in transacting tomato in Chittoor district.
2. To compute price spread and marketing efficiency in transacting tomato.

Methodology
Chittoor district in Andhra Pradesh was purposively selected for the present study, as the district ranks first in position in Andhra Pradesh under tomato cultivation in the year 2015-16.

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All the mandals in the Chittoor district along with their tomato cultivated area are listed out in descending order and top two mandals were selected viz., Madanapalle and Kalikiri. In these two mandals, all the tomato growing villages are arranged in descending order of the acreage under tomato, and top two villages were studied. The selected villages were Chinnatipppasamudram, kothavaripalle from kalikiri, Guttapalem and Patte pada from madanapalle. The list of farmers growing tomato in the selected villages was obtained. The farmers were stratified into Small (1-2 ha) and large

farmers (>2 ha) on the basis of their size of operational holding. From each of the selected villages, farmers in each size stratum were selected based on probability proportional to size. Thus, 74 small and 46 large farmers constitute the total sample for the study. The total number of tomato farmers selected for the study was 120. For eliciting the information pertaining to the marketing aspects of tomato in Chittoor district, the following marketing agencies (Table 1) have been selected by employing simple random sampling technique.

Table 1: Sample size pertaining to market intermediaries of tomato

Marketing Channel	producer	wholesaler	Distant wholesaler	Retailer	Consumer
Channel I	81	20		20	30
Channel II	39	15	20	15	30

Computation of price spread in transacting produce
Marketing costs (transport, commission, crate charges, market fees, storage charges and spoilage) at various level of tomato marketing was calculated serially and the final total marketing cost is estimated. Marketing margin at each stage of marketing is calculated as

$$Mg = SP – (PP + MC)$$

Where, Mg –Marketing margin of ith middlemen
SP – Sale Price of ith middleman
PP – Purchase price of ith middlemen
MC–Marketing cost at each stage of marketing

The producer's price is worked out as:

$$P_F = SP – MC$$

Where, P_F –Producer's price
SP– Sale price of producers
MC–Marketing cost of producers

Producer's share in consumers Rupee is worked out as:

$$PS = (PF / RP) * 100$$

Where, PS – Producer's share
RP– Retail price

Computation of Marketing Efficiency Index (MEI)
Acharya's approach:

$$MME = [FNSP / (Mc + MM)]$$

Where,
MME = Modified Measure of Marketing Efficiency
FNSP = Farmer's Net Selling Price
Mc = Marketing cost incurred by all the intermediaries
MM = Marketing Margins incurred by all the intermediaries

Results and Discussion
Marketing channels: The following two important channels were identified in the marketing of tomato in Chittoor district:
Channel-I
Producer → Wholesaler → Retailer → Consumer

Channel-II
Producer → Local wholesaler → Distant Wholesaler → Retailer → Consumer

Among the two marketing channels, the most commonly used marketing channel for transacting tomato was Channel-I. This is evident from the Table 2, as 67.50 per cent of farmers sold their produce through this channel. The proportion of small and large farmers who used this channel for transacting tomato was 71.67 and 63.33 per cents respectively. Channel II was followed by 32.50 percent of the total selected farmers. The proportion of small and large farmers following this channel was 45.00 and 20.00 per cents respectively.

Table 2: Marketing channels followed by different sized farms in marketing of tomato

S. No	Size groups	Channel I	Channel II	Total
1	Small	43 (71.67)	27 (45.00)	60 (100)
2	Large	38 (63.33)	12 (20.00)	60 (100)
3	Total	81 (67.50)	39 (32.50)	120 (100)

Note: figures in parentheses indicate percentages to the total

Price spread in tomato marketing
In the marketing of agricultural commodities, the difference between the price paid by the consumer and price received by the producer for an equivalent quantity of the farm produce is often known as farm retail price spread or price spread. The total margin includes the cost involved in moving the product from the point of production to the point of consumption i.e., the cost of performing various marketing functions and the profits of various market functionaries involved in moving the produce from the point of production till it reaches the ultimate consumer.

Marketing Costs
The marketing cost is the sum total of all costs incurred in the movement of produce and it includes such costs as transportation, loading and unloading, market fees, commission charges, spoilage, crate charges etc. The costs incurred by producer seller and marketing intermediaries in the marketing of tomato were worked out for the above two marketing channels and presented in Tables 3 and 4.

Channel-I
The farmer incurred Rs. 104.05 in marketing of one quintal of tomato. Transportation, commission and crate charges were the major items accounting for 23.98, 70.11 and 5.91 per cent respectively. The wholesaler purchased the produce from the farmer through a commission agent at Rs. 830. He was found

to incur Rs. 23.00, Rs. 46.40, Rs. 11.90, Rs. 8.78 and Rs. 20.80 on transportation, telephone and electricity, storage charges, market fees and spoilage respectively. For the retailer, major costs were transport charges (46.43 per cent), market fees (24.64 per cent). Crate charges (14.52 per cent) and spoilage (14.41 per cent) respectively.

Channel II
The total marketing cost incurred by the farmer was Rs. 112.20 (Table). Producer spent Rs. 75.00 (66.85 per cent) on commission charges towards by transport (Rs. 28.20) and crate charges (Rs. 9.00). The farmer sold the produce to the local wholesaler at Rs. 830. The local wholesaler incurred total cost of Rs. 119.80. In case of distant wholesaler also the major item of marketing cost was transportation charges (49.09 per cent), telephone and electricity charges, storage, market fees and spoilage accounting for 18.34, 10.67, 6.01

and 15.89 per cent. Finally retailer purchases the produce from distant wholesaler at Rs. 1420, in that the major marketing costs incurred by retailer were transport charges, (53.18 per cent), market fees, (19.11 per cent) crate charges (11.15 per cent) and spoilage (16.56 per cent).

Price spread in tomato marketing
Channel-I
The details of Table 4.21 and Fig 4.7 revealed that producer's share in consumers rupee was 46.84 per cent in channel-I. The farmer incurred marketing cost of Rs. 104.05 and received a net price of Rs. 725.95 per quintal of tomato.

The marketing costs and margins of the wholesaler were Rs. 110.88, Rs. 209.12 respectively and the corresponding figures for retailer were Rs.146.44, Rs. 253.56. The margins of the wholesaler and retailer accounted for 13.49 and 16.36 per cent of the consumer's rupee respectively.

Table 3: Marketing costs for one quintal of tomato in channel-I

S. No	Particulars	Amount in (Rs)	(%) in total costs
1.	Producer		
i)	Transport charges	24.95	23.98
ii)	Commission charges	72.95	70.11
iii)	Crate charges	6.15	5.91
	Total costs	104.05	100
2.	Wholesaler		
i)	Transport charges	23.00	20.74
ii)	Telephone and Electricity charges	46.40	41.85
iii)	Storage charges	11.90	10.73
iv)	Market fees	8.78	7.92
v)	Spoilage or wastage	20.80	18.76
	Total costs	110.88	100
3.	Retailer		
i)	Transport charges	68.00	46.43
ii)	Market fees	36.08	24.64
iii)	Crate charges	21.26	14.52
iv)	Wastage or Spoilage	21.11	14.41
	Total costs	146.44	100

Table 4: Marketing costs for one quintal of tomato in channel-II

S. No	Particulars	Amount in (Rs)	(%) in total costs
1.	Producer		
i)	Transport charges	28.20	25.13
ii)	Commission charges	75.00	66.85
iii)	Crate charges	9.00	8.02
	Total costs	112.20	100
2.	Local wholesaler		
i)	Transport charges	49.50	41.32
ii)	Telephone and Electricity charges	24.50	20.45
iii)	Storage charges	15.80	13.19
iv)	Market fees	8.60	7.18
v)	Spoilage or wastage	21.40	17.86
	Total costs	119.80	100
3.	Distant wholesaler		
i)	Transport charges	62.10	49.09
ii)	Telephone and Electricity charges	23.20	18.34
iii)	Storage charges	13.50	10.67
iv)	Market fees	7.60	6.01
v)	Spoilage or wastage	20.10	15.89
	Total costs	126.50	100
4.	Retailer		
i)	Transport charges	72.90	53.18
ii)	Market fees	26.20	19.11
iii)	Crate charges	15.29	11.15
iv)	Wastage or Spoilage	22.70	16.56
	Total costs	137.09	100

Table 5: Price spread for one quintal of tomato

S. No	Particulars	Channel-I	Channel-II
1.	Price received by producer	830 (53.55)	830 (46.11)
i	Market costs	104.05 (6.71)	112.20 (6.23)
ii	Net price	725.95 (46.84)	717.80 (39.88)
2.	Wholesaler		
i	Purchase price	830 (53.55)	830 (46.11)
ii	Market cost	110.88 (7.15)	119.80 (6.66)
iii	Margin	209.12 (13.49)	150.02 (8.33)
3.	Distant wholesaler		
i	Purchase price		1100 (61.11)
ii	Market cost		126.50 (7.03)
iii	Margin		193.5 (10.75)
4.	Retailer		
i	Purchase price	1150 (74.19)	1420 (78.89)
ii	Market cost	146.44 (9.45)	137.09 (7.62)
iii	Margin	253.56 (16.36)	242.91 (13.50)
	Total marketing costs	361.37 (23.31)	495.59 (27.53)
	Total marketing margins (Net profit retained by the marketing functionaries after meeting their costs)	462.68 (29.85)	586.43 (32.58)
	Consumer's purchase price	1550 (100)	1800 (100)

Channel-II

The analysis of marketing costs and margins in Table 4 indicated that the producer realized a net price of Rs. 717.80 per quintal of tomato accounting for 39.88 per cent of the price paid by the consumer.

After deducting all expenses, the local wholesaler earned a margin of Rs. 150.02 per quintal which accounted for 8.33 per cent of consumer's rupee. Distant wholesaler also earned a margin of Rs. 193.50 which accounted for 10.75 per cent of consumer's rupee.

The retailer purchased tomato at a price of Rs. 1420 per quintal and sold to the consumer for a price of Rs. 1800. In the process, the margin of retailer was Rs. 242.91 accounting for 13.50 per cent of the consumer's rupee. From the forgoing analysis, it can be inferred that the producer was getting a higher share of consumer's rupee in Channel I over channel II. It was observed that profit margin both in absolute and relative terms were maximum in case of retailer. The producers of tomato realized 46.84 and 39.88 per cent of consumer's rupee in Channel-I and Channel-II respectively. These results are in concurrence with the findings of Pravin Jagtap (2014) [4].

Marketing efficiency in the selected marketing channels

The marketing efficiency was computed by using Acharya's method and the results are presented in Table 4.22. It is seen from the table that the index of marketing efficiency was higher in channel I, i.e., 1.01 indicating that the channel I is more efficient than channel II. The inefficiency in channel II was due to high marketing costs and margins involved in the marketing of tomato. The results are in agreement with the findings of Chole et al. (2002) [2].

Table 6: Indices of marketing efficiency in the selected marketing channels

S. No	Particulars	Channel –I	Channel-II
1	Price received by the farmer (FP)	830.00	830.00
2.	Marketing costs + Marketing margins (MC+MM)	824.05	1082.02
3.	Index of Marketing efficiency (MMC)	1.01	0.77

Conclusions

Among the three marketing channels identified in transacting tomato in Chittoor district, Channel-II was found to have higher MEI compared to Channel-I. In view of this, the government should construct approach roads for easy transport of produce to the market centres so as to secure highest producer share in consumer rupee. Instead of transporting the produce individually from the farm gate to the district market centre, it is essential to establish a loading station in the vicinity of the villages, so as to assemble the produce at loading station and transport it to the market centre on cost effective basis. However, due to unorganised marketing of tomato, the producer share in consumer rupee was low across all the two marketing channels. Hence, tomato may be included in the list of notified commodities and to be brought under the purview of Agriculture Produce Market Committee Act. Further, the Department of Horticulture should make necessary arrangements for the display of marketing news and information so that, the farmers can plan the sale of their produce at the market, where they get higher price. The Department of Horticulture in consultation with the State Government of Andhra Pradesh should make arrangements to transact tomato in Rythu Bazar's, as tomato is consumed as a regular diet by the households.

References

1. Balappa SR, Hugar LB. Economics of production and marketing of tomato in Karnataka. Indian Journal of Agricultural Marketing. 2002; 16(2):18-25.
2. Chole VM, Talathi M, Patil HK. Price spread in marketing of bitter gourd and tomato in panvel tehsil of raigad district of Madhya Pradesh. Indian Journal of Agricultural Marketing. 2002; 16(2):64-67.
3. De S, Rahaman SM. Economics of production and marketing of cabbage in Bankura district of West Bengal. Journal of Crop and Weed. 2014; 10(1):101-106.
4. Pravin J, Shingane US, Kulkarni KP. Resource use efficiency and economics of marketing of green chilli. Journal of Spices and Aromatic Crops. 2014; 23(1):32-37.
5. Sashimatsung, Giribabu M, Lanusunep. Marketable surplus and price spread of tomato in Mokokchung district of Nagaland. International Journal of Humanities and Social Science Invention. 2013; 2(8):37-42.